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EXAMINER

LIN, SHEW FEN

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No. 10/783,999	Applicant(s) POTTER ET AL.	
Examiner Shew-Fen Lin	Art Unit 2166	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 22 May 2007.
- 2a) This action is **FINAL**.
- 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-16 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-16 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) Notice of Informal Patent Application
- 6) Other: _____

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DETAILED ACTION

- a. This action is taken ⁱⁿ to response to remarks filed on 5/22/2007.
- b. Claims 1-16 are pending in this Office Action. Claims 1 and 12 are independent claims.

Priority

Certified copy of the application 2,419,502 filed in Canada is received and acknowledged.

Since the foreign application relied upon as a priority document contains a less detailed disclosure of the instant invention as admitted by Applicant, therefore, the claim of priority will be considered on a claim-by-claim basis.

Claim Rejections – 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 12-16 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. They merely present an abstract idea without any practical application that produces a useful, concrete, and tangible result.

As per claim 12, the claimed process, “partitioning a data...., creating member cubes...., creating a control cube....”. Since mere creating without associated with any physical device is not a tangible result, the claim fails to recite a tangible result, as the creating step is not tangible.

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Regarding claims 12-16 depend from rejected claim 12, comprise the same deficiencies as those claims directly or indirectly by dependence, and are therefore rejected on the same basis.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-6, 9, and 11-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Yeh (US Patent 6,980,980).

As to claim 1, Yeh discloses a system for storing data (column 1, lines 7-8), the system comprising: one or more member cubes (detailed cubes, Figure 4, item 26) for storing data partitioned along a dimension (column 2, lines 17-20, lines 59-65); a control cube for accessing the member cubes (summary cube, Figure 4, item 28, column 2, lines 65-67, column 8, lines 23-27).

As to claim 2, Yeh discloses wherein the control cube has an entire partitioned dimension relative to the member cubes (column 6, lines 48-51, column 8, lines 21-28).

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As to claim 3, Yeh discloses the system as claimed in claim 2, wherein the control cube further has: a listing of other dimensions of the member cubes (column 7, lines 50-52); and a listing of measures of the member cubes (Figures 2-5, column 5, lines 20-35, column 6, lines 43-46).

As to claim 4, Yeh discloses wherein the data is partitioned along the time dimension (Figures 1 and 5).

As to claim 5, Yeh discloses the system as claimed in claim 4, wherein the control cube has: an entire time dimension relative to the member cubes (column 2, lines 52-56); a listing of other dimensions of the member cubes (shared dimensions, Figure 4 item 36); and a listing of measures of the member cubes (Figure 5).

As to claim 6, Yeh discloses the system as claimed in claim 5, wherein a member cube is added to the system (add new detailed cube, column 2, lines 28-32, column 7, lines 58-63).

As to claim 9, Yeh discloses the system as claimed in claim 5, further comprising a plurality of control cubes, each control cube coupled with a group of member cubes from a pool of member cubes to form a separate dimension-based partitioned cube (column 7, lines 12-19).

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As to **claim 11**, Yeh discloses the system as claimed in claim 2, wherein a member cube is the control cube of another dimension-based partitioned cube (column 6, lines 36-46, column 7, lines 12-23).

As to **claim 12**, Yeh discloses a method of transforming a body of data into a dimension-based partitioned cube (abstract), the method comprising the steps of: partitioning the data into one or more dimension-based partitions (column 1, lines 17-20, lines 59-65); creating member cubes corresponding to the one or more dimension-based partitions (detailed cubes, Figure 4, item 26, column 3, lines 39-41); and creating a control cube for representing the data distributed over the member cubes (summary cube, Figure 4, item 28, column 2, lines 65-67, column 8, lines 23-27).

As to **claim 13**, Yeh discloses wherein the data is partitioned along the time dimension (Figures 1 and 5).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims

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was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 7 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yeh as applied to claim 13 above, and further in view of Joy Mundy ("Using Partitions in a Microsoft SQL Server 2000 Data Warehouse", February 2001, <http://msdn.microsoft.com/library/default.asp?url=/library/en-us/dnsq12k/html/partitionsindw.asp>, hereinafter referred as Mundy).

As to **claim 7**, Yeh discloses the element of claim 5 as noted above but does not explicitly disclose wherein a member cube is removed from the system.

Mundy discloses dropping old partitions either after merging or just to remove aged partition (pages 7 and 10).

It would have been obvious to a person of ordinary skill in the art at the time of invention was made to modify Yeh's disclosure to drop old partitions as taught by Mundy for the purpose of keeping most recent data in cubes. The skilled artisan would have been motivated to improve the invention of Yeh per the above to remove daily partition after merging into weekly partition (page 12).

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As to **claims 14-16**, Yeh discloses partitioning along time dimension as noted above but does not explicitly disclose data is partitioned into equidistant, non-equidistant or sliding window of time intervals.

Mundy discloses time (date) dimension is usually the first partition dimension (pages 7 and 8) and can be choose a different granularity such as day, week, month or year (page 5). It is common to define a partition plan that drills down on one part of the cube. For example, recent data may be partitioned by day or week, older data by month or year (pages 9 and 15). Different time interval partition (equal interval: days, non-equal interval: day-week, sliding window interval: day, week, month, year) is used to build partition in order to minimize the number of active partitions.

It would have been obvious to a person of ordinary skill in the art at the time of invention was made to modify Yeh's disclosure to include equidistant, non-equidistant or sliding window of time intervals to partition time dimension as taught by Mundy for the purpose of merging the aged data together. The skilled artisan would have been motivated to improve the invention of Yeh per the above to optimize the number of the partitions and query performance (page 12).

Claims 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yeh as applied to claims 5 and 9 above, and further in view of Pasumansky et al. (US Patent 6,477,536, hereinafter referred as Pasumansky).

As to **claim 8**, Yeh discloses the system as claimed in claim 5 but does not explicitly disclose wherein the control cube restricts access to member cubes.

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Pasumansky discloses maintaining the security information about a cube in a cube metadata. The security information defines the access rights granted to users of OLAP sever with respect to the cube (column 7, lines 61-64).

It would have been obvious to a person of ordinary skill in the art at the time of invention was made to modify Yeh's disclosure to include security information in the summary cube (associated metadata) as taught by Pasumansky for the purpose of providing data security by exposing only a subset of the cube to a user (column 2, lines 12-14, Pasumansky). The skilled artisan would have been motivated to improve the invention of Yeh per the above such that there is a flexibility in defining security parameter for a cube (column 2, lines 1-9).

As to claim 10, Yeh discloses the system as claimed in claim 9 but does not explicitly disclose, wherein different control cubes over the same pool of member cubes restrict data access to different portions of data for different users.

Pasumansky discloses maintaining the security information about a cube in a cube metadata (column 7, lines 61-64). The security restrictions applied to virtual cubes (summary cube) as not dependent upon security restrictions applied to the physical cubes (column 11, lines 52-58). Different control cube (summary cube) can have different security information in its metadata and providing different restriction to the same pool of member (physical cubes).

It would have been obvious to a person of ordinary skill in the art at the time of invention was made to modify Yeh's disclosure to include security information in the summary cube (associated metadata) as taught by Pasumansky for the purpose of providing data security by exposing only a subset of the cube to a user (column 2, lines 12-14, Pasumansky). The skilled

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artisan would have been motivated to improve the invention of Yeh per the above such that there is a flexibility in defining security parameter for a cube (column 2, lines 1-9).

Response to Remarks

Applicant's arguments and remarks have been fully considered but they are not deemed to be persuasive.

Response to remarks on 35 U.S.C. § 101 rejections

First of all, the 101 Rejection is still maintained as shown above. The Applicant is once again being encouraged and advised to amend the claims so that the subject matter disclosed therein is statutory.

Regarding claims 12-16, these claims recite a method of creating cubes, but fails to recite a useful, concrete, and tangible result, a requirement for compliance with the provisions of 35 U.S.C. § 101 for a process that can be interpreted as being implemented through software. The claimed inventions, as a whole must accomplish a practical application. That is, it must produce a "useful, concrete and tangible result." *State Street, 149 F.3d at 1373, 47 USPQ2s at 1601-02. MPEP 2106*. In this case, the result is simply partitioning data and creating cubes. The claimed limitations are an abstraction as they are not useful, concrete, and tangible they are not put in any tangible form and not useful because they are not presented in such a way as to produce and/or provide some result that is of utility that may exist in the specification however no specific use is provided for in the claimed invention. Thus the claims are non-statutory and stand rejected under 101 as not **producing a "useful, concrete and tangible result."**

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In addition, all elements of the claims such as "partitioning the data", "creating member cubes", and "creating control cube" are not physical structural element, but instead application program, or software. These claims are therefore non-statutory subject matter because they are software per se, and not tangibly embodied. This subject matter does not fall within a statutory category of invention because it is neither a process, machine, manufacture, nor a composition of matter.

Response to remarks on 35 U.S.C. § 102 rejections

Applicants argue "The summary cubes of Yeh appear to contain the upper level members while the control cubes as claimed in the present invention are for accessing the member cubes". The Examiner respectfully disagrees.

Applicant is reminded that the Examiner is entitled to give claim limitations their broadest reasonable interpretation in light of the specification. During patent examination, the pending claims must be 'given the broadest reasonable interpretation consistent with the specification.' Applicant always has the opportunity to amend the claims during prosecution and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. In re Prater, 162 USPQ 541,550-51 (CCPA 1969). In this case, Yeh clearly teaches using summary cube (control cube) to navigate information in detailed cubes (partitioned member cubes), see Fig. 4.

Applicants argue "does not teach a control cube having an entire partitioned dimension relative to the member cubes" because Yeh teaches that detail cubes have the same dimensionality as summary cube except their target dimensions are partitioned. The Examiner

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respectfully disagrees. As admitted by Applicants, Yeh clearly teaches summary cube (control cube) has an entire partitioned dimension and the detailed cubes contain the partitioned target dimensions.

Applicants argue that Yeh does not disclose measures. The Examiner respectfully disagrees. Yeh discloses a list of measures, such as page views, unique user counts, see column 6, lines 43-46.

Applicants argue that Yeh does not show data partitioned along a time dimension, a member cube being the control cube. The Examiner respectfully disagrees. Yeh clearly discloses partitioning data along a time dimension, such as YEAR, MONTH, DAY, as shown in Figure 5. Yeh discloses the summary cube database component stores the members of an upper level of a dimension. The partitioned dimension component contains a subset of the members of a lower level of the dimension in addition to the upper level members associated with the summary cube database component. The subset of the lower level members is partitioned from the dimension based on a selected member of the upper level. The detail cube database component includes the partitioned dimension component and one or more sub-cubes containing aggregations of the subset of the lower level members, i.e. the detailed cube can be the summary cube for the lower level members, see column 3, lines 36-46.

Response to remarks on 35 U.S.C. § 103 rejections

Applicants argue, “the assignee of the Yeh reference is the same entity that purports to own the Joy Mundy reference which was published prior to the Yeh reference. As such, Applicants submit that if it were obvious to a skilled person to combine these two references

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together, Yeh would have included any Joy Mundy functionality in its disclosure". The Examiner respectfully disagrees.

Obviousness is established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. Whether prior arts have the same assignee or the order of prior arts published date is irrelevant to USC 103 rejection. Moreover, each patent application/publication has its own subject matter to be disclosed and may not repeat the subject matter already disclosed in other patent application/publication, especially in the case of application/publication with common assignee.

Related Prior Arts

The following list of prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- DeKimpe; Daniel Martin et al., US 6542895 B1, "Multi-dimensional restructure performance when adding or removing dimensions and dimensions members"
- Reddy; Venugopal P. et al., US 6839711 B1, "Configurable space-time performance trade-off in multidimensional data base systems"
- Zait; Mohamed et al., US 6931390 B1, "Method and mechanism for database partitioning"
- Kornelson; Kevin Paul et al., US 7024431 B1, "Data transformation to maintain detailed user information in a data warehouse"

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shew-Fen Lin whose telephone number is 571-272-2672. The examiner can normally be reached on 8:30AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain Alam can be reached on 571-272-3978. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-9600.

August 1, 2007

Shew-Fen Lin
Patent Examiner
Art Unit 2166


HOSAIN ALAM
SUPERVISORY PATENT EXAMINER